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Relative Risk in Municipal and Corporate Debt: Discussion

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function should not depend upon the particular asset chosen; that is, one could use common stocks or bonds, or some combination and the estimated parameters of the utility function should not be statistically different. Looking at Table 1, this does not appear to be the case with the value of the γ parameter ranging from -1.910 to -3.755 , suggesting that the model is misspecified in some way. It should also be noted that these values seem to be quite different from those reported in Hansen and Singleton (1982) where γ ranged from $-.67$ to $-.96$, though these estimates pertain to a slightly different time period.

The authors have presented evidence that the assumption of logarithmic utility may be violated. Given that the authors are using a general asset pricing model, how does this model compare to the results from the Dunn and McConnell paper? Unfortunately, the authors do not address this issue.

In order not to leave the incorrect impression, this is an interesting paper and a paper that is certainly worth reading. Drawing on the statistical methodology described in Hansen and Singleton (1982), the authors present an interesting menu of possible applied extensions. Hopefully, more comprehensive empirical results will be available in the near future.

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DISCUSSION

CLIFFORD W. SMITH, Jr*: It has been noted that the term structure for tax exempt municipal bonds appears to differ significantly from that of taxable corporates. Much of the theoretical literature related to this question is framed in a Fisher world with no uncertainty to highlight the implications of the tax code. Skelton (1983) compares the risk characteristics of tax exempt municipal bonds with those of comparable taxable corporate bonds in an effort to explain the observed differences. After offering reasons why the value of the tax advantage of municipals would be dependent on the interest rate for financial institutions and individuals, he examines a sample of twenty actively traded municipal bonds.

This work represents a welcome addition to the literature. I think that to date, theoretical speculation has far exceeded empirical confirmation in this area. This paper helps to close the gap. Since the paper is generally well done, my comments focus on where profitable additional work might be directed.

First, the hypotheses offered to explain the differences in the term structures of corporate and municipal bond rates can be expanded and extended. The arguments about the relation between changes in interest rates and the value of

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the tax advantage of municipals for financial institutions are directly testable. Data exists on taxes paid by banks and insurance companies which would allow calculation of the covariance between interest rates and the tax rates of these financial institutions. I would also suggest broadening the scope to include explicit consideration of the tax trading hypotheses of Constantinides/Ingersoll (1983) which may help explain observed differences in term structures of interest rates between municipals and corporates. And since both these arguments examine demand induced price effects, some thought should be given to insure that there are no confounding effects from the supply side.

Second, some care in interpretation should be exercised in going from Table 2 to Table 3. Table 2 characterizes the distribution of returns to individual municipal bonds while Table 3 compares risk characteristics of municipal and corporate bonds by examining the returns to portfolios. Although the variances of the returns to the portfolios are similar, this fact is not sufficient to conclude that the distribution characteristics of individual bonds are similar. For example, the average municipal bond variance might be less than the average corporate bond variance but the covariance among returns to municipal bonds be higher than that for corporates, yielding similar portfolio variances. Thus, it would seem instructive to examine corporate and municipal bond return distributions at a similar level of disaggregation.

Third, measured risk differences could simply reflect differences in characteristics unrelated to tax status. Skelton must rely on a bond rating service to pick out issues of similar risk. It would seem a strong argument that Moody's corporate and municipal bond ratings are comparable both across as well as within manuals. Thus Skelton does not provide the most powerful test of the hypothesis that "differences in tax status lead to differences in risk characteristics". The ideal test would compare tax exempt industrial revenue bonds with taxable corporate bonds secured by the same underlying cash flows.

REFERENCES

- George M. Constantinides, and Jonathan E. Ingersoll (1983) "Optimal Bond Trading with Personal Taxes: Implications for Bond Prices and Estimated Tax Brackets and Yield Curves", unpublished manuscript, University of Chicago.

DISCUSSION

MICHAEL R. GIBBONS*: There are very few empirical studies on the stochastic characteristics of interest rates. Given the economic significance of bond prices, this paper provides some very useful results. Particularly important is the authors' emphasis on temporal aggregation issues. In other words, what would be the effects of observing interest rates with a sampling interval which differs from the underlying time interval of the true stochastic process? The implications of such temporal aggregation need to be explored if a tight linkage between theoretical models and empirical work is to be established. Many of the important models

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